



**UNIVERSITI PUTRA MALAYSIA**

**PROJECT PLANNING TOOL**

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# **PROJECT PLANNING TOOL**

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## **ABSTRACT**

Doing planning in the early stage of a project is critical. This is because a project plan establishes and maintains a plan that defines the project activities. This in turn will provide a project manager useful information to make decisions to achieve project goals. The Malay Language Project Planning Tool described in this thesis takes a further step to help project managers do their project planning by automating the process of establishing project budget, producing a schedule, identifying potential project risks, managing project data, determining the stakeholders and resources needed, and required skill to have in the project.

Developed using C# programming language on Microsoft's .NET platform and supported by Microsoft SQL Server 2000 for its database, this system is built for a client-server environment and is meant to be used in an organization that uses Malay Language as its medium and where information can be shared by authorized users of the system.

## ABSTRAK

Merancang projek di peringkat awal adalah kritikal. Ini adalah kerana sebuah rancangan projek akan menyedia dan memastikan sebuah rancangan yang memperincikan aktiviti-aktiviti projek. Maklumat di dalam rancangan projek ini dapat membantu seseorang pengurus projek dalam proses pembuatan keputusan demi mencapai matlamat projek. 'Project Planning Tool' berbahasa Melayu yang diterangkan di dalam laporan ini adalah satu langkah lanjut untuk membantu kerja-kerja merancang projek dengan mengautomasikan proses-proses menyatakan bajet projek, menghasilkan jadual projek, mengenalpasti potensi risiko yang mungkin dihadapi projek, menguruskan data-data projek, mengenalpasti sumber-sumber projek dan skil sumber manusia yang diperlukan oleh projek dan menyatakan syarikat atau individu yang mempunyai kepentingan di dalam projek.

Dibangunkan menggunakan bahasa pengaturcaraan C# di atas platform Microsoft .NET dan disokong oleh Microsoft SQL Server 2000 sebagai pangkalan datanya, sistem ini dibina untuk persekitaran 'client-server' dan dimaksudkan untuk kegunaan di dalam sebuah organisasi yang menggunakan Bahasa Melayu sebagai bahasa pengantaraan dan di mana maklumat-maklumat di dalam sistem ini dapat dikongsi oleh pengguna sistem yang sah.

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05 May 2005

## **APPROVAL**

This thesis submitted to the Faculty of Computer Science and Information Technology of Universiti Putra Malaysia has been accepted as fulfillment of the requirement for the degree of Master of Science (Computer Science).



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## DECLARATION

I hereby declare that this thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.



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**HAFIZA ALIAS**

Date: 05 May 2005

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## **LIST OF ABBREVIATIONS**

[1]	<b>CLI</b>	Common Language Infrastructure
[2]	<b>CMMI</b>	Capability Maturity Model Integration <sup>®</sup>
[3]	<b>ECMA</b>	European Computer Manufacturers Association
[4]	<b>HTP</b>	HeiTech Padu Berhad
[5]	<b>IDE</b>	Integrated Development Environment
[6]	<b>ODBC</b>	Open Database Connectivity
[7]	<b>OMG</b>	Object Management Group
[8]	<b>PMBOK2000</b>	Project Management Body Of Knowledge <sup>®</sup> 2000
[9]	<b>PMI</b>	Project Management Institute
[10]	<b>PP</b>	Project Planning Process Area in CMMI
[11]	<b>RAD</b>	Rapid Application Development
[12]	<b>RDBMS</b>	Relational Database Management System
[13]	<b>SEI</b>	Software Engineering Institute
[14]	<b>SQL</b>	Structured Query Language
[15]	<b>UML</b>	Unified Modeling Language
[16]	<b>WBS</b>	Work Breakdown Structure

## GLOSSARY OF TERMS

- [1] **Project** A project is defined as a temporary endeavor undertaken to create unique product or services [1].
- [2] **Project Plan** A formal, approved document used to guide both project execution and project control. Its primary use is to document planning assumptions and decisions, facilitates communication among stakeholders, and document approved scope, cost and schedule baselines. A project plan may be summary or detailed [1].
- [3] **Project Planning** The development and maintenance of the project plan [1].
- [4] **Relational database management system (RDBMS)** A system that organizes data into related rows and columns
- [5] **Risk** Uncertain or condition that, if it occurs, has a positive or negative effect to a project's objectives.
- [6] **Stakeholders** Any individual who has an interest or stake in the project at any time during the project life cycle [11].
- [7] **Work Breakdown Structure** A deliverable-oriented grouping of project elements that organize and define the total work scope of the project. Each descending level represents an increasingly detailed definition of the project work [1].



## CHAPTER 1 INTRODUCTION

In IT business today, companies compete to deliver products better, faster and cheaper. Many had failed to do so because they ignored the first rule to quality product – planning. Numerous software development projects do not live up to expectations or sadly fail to meet its user's expectations because they failed to plan for their project. A quality project planning is important because it will enable project manager to derive useful information to make decisions to achieve project goals.

Information gathered during the project planning is documented in a Project Plan document. A project plan is referred to through out the project life cycle. Among the important aspects stated in a project plan are scope of the project, the cost, time and potential risk that the project may face. The task of doing a project planning falls to the responsibility of the project manager. So, it is most suitable that the main user designed to use this tool shall also be the project manager.

One factor that distinguishes this Project Planning Tool is its medium of language that uses the Malaysian national language of Bahasa Melayu. This shall prove to be useful for those who have low level of understanding foreign language Project Planning Tool and for dealing with government projects.

### 1.1 PROBLEM STATEMENT

The purpose of this project is to produce a Malay language **Project Planning Tool**. A Project Planning Tool is a tool that will help a project manager to properly plan a project based on the project requirements and the project's established estimates. The

proposed Project Planning Tool will involve establishing project budget, producing a schedule, identifying potential project risks, planning for data management, determining the resources needed and planning the stakeholder involvements. These activities will provide the basis for a project manager to produce a document generically called project plan. With the project plan, the project manager will be able to monitor and control the project's activities to address the commitment to its customer.

## **1.2 PURPOSE, SCOPE AND OBJECTIVES**

This section describes the purpose of this project, its scope and objectives.

### **1.2.1 Purpose**

The purpose of this project is to develop a Malay language Project Planning Tool that uses generally accepted planning practices for a project that support process improvement as stated by the project planning process area in CMMI. Another important characteristic of this Project Planning Tool is that it shall be a user friendly tool that emphasis on simplicities of usage.

### **1.2.2 Scope**

The Project Planning Tool covers following scopes:

1. Creation of a project – including the project profile, budget and stakeholders.
2. Manage the project schedule - including the task dependencies, schedule, milestone and assigning resources to the task.
3. Identify and manage potential project risks
4. Manage the project data - may include reports, manuals, charts etc

5. Manage the project resources - resources are divided into human resource and non-human resources (machinery/ equipment, materials, and methods).
6. Manage plan for needed knowledge and skills for project staffs.
7. Generate reports related to project planning
8. Maintenance of project settings - includes working hours and holidays
9. Manage the users of the system

The intended users for this Project Planning Tool include system administrator, project managers and project owner.

### **1.2.3 Objectives**

The objectives of this project are as follows:

1. To produce requirement specification for the tool
2. To design the entire system
3. To develop the Project Planning Tool and
4. To showcase the final product

## **1.3 CHAPTER OVERVIEW**

This document is divided into five chapters as follows:

**Chapter 1** Introduce the project, its purpose, scope and objectives, definition, acronyms and abbreviations, references and chapter overview.

**Chapter 2** Describe the reviews on literature found on Project Planning Tool.

**Chapter 3** Describes the methodology applied to this project.

- Chapter 4** Describes the result and analysis done for the project
- Chapter 5** Discuss the result of this project.
- Chapter 6** Concludes this report.
- References** List of references used for this report and project built
- Appendix A** User Manual

## CHAPTER 2 LITERATURE REVIEW

This chapter reviews the literature found on the subject of project planning and project planning tools.

### 2.1 THE IMPORTANCE OF PROJECT PLANNING

A project is defined as a temporary endeavor undertaken to create unique product or services. A project is temporary because it starts on a definite date and ends on a definite date. It is also unique because the product or service is different in some distinguishing way from other product or services [1].

Project planning is the key to successful project. It is important because it establishes and maintains plans that define project activities [2]. Planning a project involves doing something that has not been done yet, so the amount of planning should commensurate with the scope of project and the usefulness of the information involved [1].

Known factors that lead to project failure include [7]:

- 1) Absence of a clear vision and statement of requirements
- 2) Unrealistic expectations due to estimating difficulties and organizational politics
- 3) Lack of project decomposition
- 4) Inadequate staffing policies and team conflicts
- 5) Lack of stakeholder involvement and focus
- 6) Lack of strategies focus and executive management support.

Measuring the success of projects is done in terms of adherence to deadlines, budgets and features or services delivered. It should also be measured in terms of their value to stakeholders and its contribution towards the organization's strategic goals [7]. Specifically during planning, the project definition, estimating and risk assessment becomes critically important [6].

During project definition, objectives of the project and its requirement are outlined. A clearly defined requirement will specify what the product must do (but not how to do it). Next is to choose the software development process, either to use waterfall model or OO model or others. Finally decompose the project into hierarchically structured well-defined and manageable tasks or activities of WBS (Work Breakdown Structure). The third activity, risk assessment is influenced by risk identification, risk analysis, and risk prioritization [6].

A few experiences in implementing software project planning were recorded [5], [8]. In these cases, Project Planning Tools were designed for use in organizations to plan the schedule and resource, and even in producing software development plan in a project.

## **2.2 PLANNING IN PROJECT MANAGEMENT METHODOLOGIES / FRAMEWORK**

Project management is defined as the application of knowledge, skills, tools and techniques to project activities to meet project requirement. A project management activity includes initiating, planning, executing, controlling and closing [1].

The more established project management methodology such as PMI's ***Project Management Body of Knowledge (PMBOK)***, ***Step Wise*** method and ***PRINCE2*** gives proper attentions to the planning aspect in project management. Step Wise and PRINCE2 approaches to planning are very product-based while PMBOK organizes project management into nine knowledge areas that are generally accepted in project management practices. It describes components of processes including planning at much higher and abstract level than Step Wise and PRINCE2 [3].

Software Engineering Institute (SEI) through its Capability Maturity Model Integration (***CMMI***) framework also preaches project planning to achieve its overall target of software process improvement. However CMMI strength is in improving the process itself.

The PMBOK2000 is made up nine (9) knowledge areas that are generally accepted in project management knowledge and practice. The project planning is covered in detail in PMBOK2000 as in [1]. The Figure 1 below shows PMBOK2000's relationship among the planning processes.

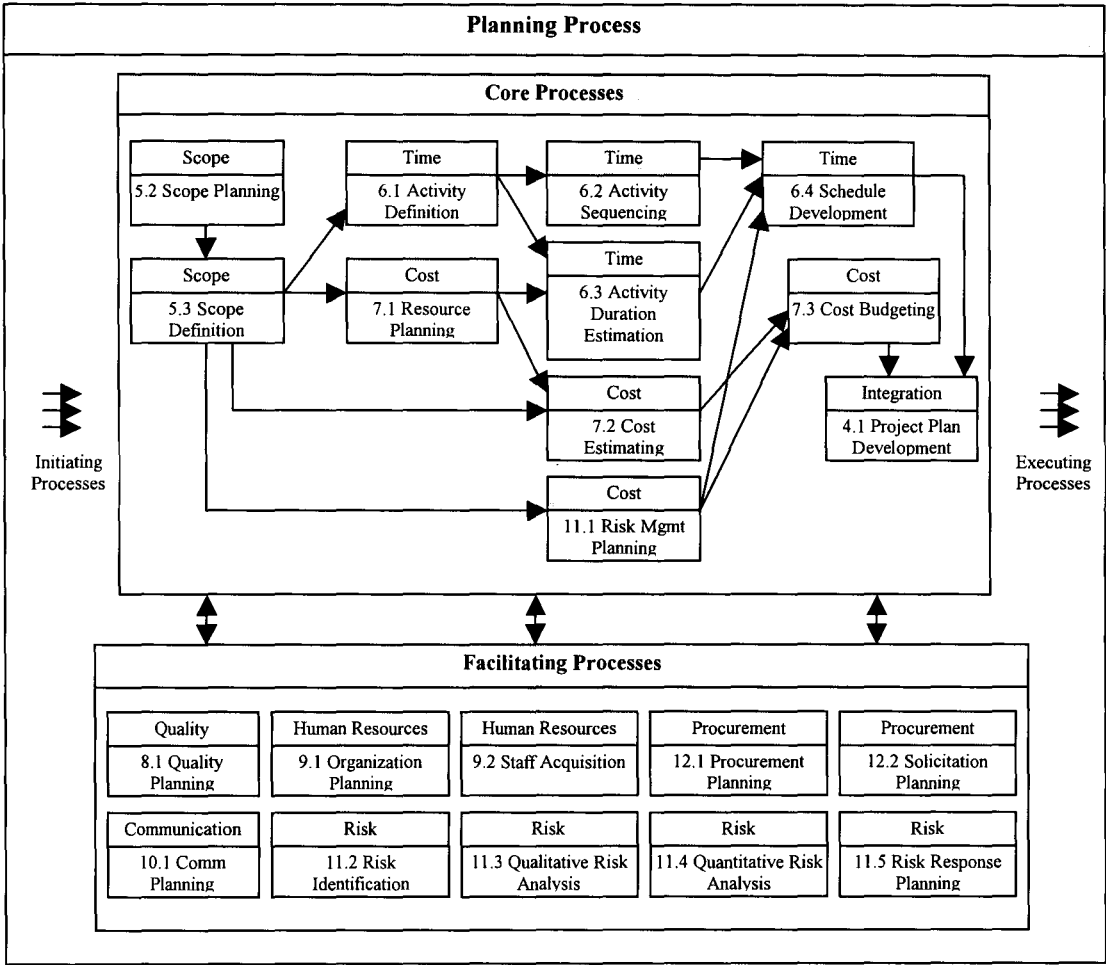


Figure 1: Relationship among the Planning Processes in PMBOK2000 [1]

CMMI is a process improvement framework for mature practices in specified disciplines of system and software engineering that is used to assess a group’s capability to perform those disciplines [9]. CMMI promotes improved schedule and budget predictability, cycle time, productivity, quality, customer satisfaction, employee morale, return of investment and decrease of cost of quality.

In CMMI, Project Planning is recognized as an important process area at its maturity level 2. The CMMI project planning was developed specific to software project planning. It takes into consideration of establishing estimates of the project planning





parameters, developing project plan and making sure the project plan gets commitment from those responsible for implementing and supporting the plan [4].

The Project Planning Tool takes into consideration of both PMBOK2000 and CMMI methodologies in developing a Project Planning Tool since both complement each other in project planning. It should be noted though, that given the timeframe that it is rather impossible to complete a system consisting of the whole practices of PMBOK and CMMI. As such, this proposal contain only the important functionalities from the established project planning practices with the hope that it will be become a base for a complete system in the near future.

### **2.3 PROJECT MANAGEMENT INFORMATION SYSTEM (PROMISE)**

PROMISE is a project management system that has been build for the HeiTech Padu Berhad (HTP) and baselined against PMBOK2000. It is a web-based content distribution system that includes all nine knowledge areas of PMBOK.

PROMISE uses project templates in the tool. This means the system is actually semi-automatic. The templates while helps increases productivity and standardize the output for the many projects in an organization, does require the writer to capture information as many times as the number of templates.

The Planning phase in PROMISE follows the PMBOK2000 planning processes with regards to HTP standards. The 21 planning stages across the 9 knowledge areas are fully implemented in PROMISE. Most of the knowledge areas are dependent on each other's outputs and require planning in a very structured manner.